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A Microcomputer Pollution Model for Civilian Airports and Air Force Bases USER'S GUIDE-ISSUE 2

U.S. Department of Transportation
Federal Aviation Administration
Office of Environment and Energy
Washington, D.C. 20591

United States Air Force
Engineering Services Center
Tyndall Air Force Base, Florida 32403

August 1988

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FAA FAA-EE-88-3
USAF ESL-TR-88-54

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Technical Report Documentation Page

1. Report No	2 Government Accession No.	3. Recipient's Catalog No.
(FAA) FAA-EE-3 (USAF) ESL-TR-54		

4. Title and Subtitle	5. Report Date
A MICROCOMPUTER POLLUTION MODEL FOR CIVILIAN AIRPORTS AND AIR FORCE BASES -- USER'S GUIDE - ISSUE 2	AUGUST 1988
	6. Performing Organization Code
	8. Performing Organization Report No.
7. Author(s) H. M. SEGAL	DOT/FAA
9. Performing Organization Name and Address FEDERAL AVIATION ADMINISTRATION OFFICE OF ENVIRONMENT AND ENERGY 800 INDEPENDENCE AVENUE, SW. WASHINGTON, DC 20591	10. Work Unit No. (TRAIS)
	11. Contract or Grant No.
	13. Type of Report and Period Covered USER'S GUIDE
12. Sponsoring Agency Name and Address THE EDMS PROGRAM IS BEING JOINTLY FUNDED BY THE FAA (SEE ABOVE) AND THE USAF ENGINEERING SERVICES CENTER, TYNDALL AIR FORCE BASE, FLORIDA 32403	14. Sponsoring Agency Code AEE-30(FAA);AFESC/RDVS(USAF)
15. Supplementary Notes	

16 Abstract

This is one of three reports describing the Emissions and Dispersion Modeling System (EDMS). All reports have the same title—A MICROCOMPUTER MODEL FOR CIVILIAN AIRPORTS AND AIR FORCE BASES—but different subtitles. These subtitles are:

(1) USER'S GUIDE - ISSUE 2 ..... (FAA-EE-88-3/ESL-TR-88-54)
(2) MODEL DESCRIPTION ..... (FAA-EE-88-4/ESL-TR-88-53)
(3) MODEL EVOLUTION AND APPLICATION ..... (FAA-EE-88-5/ESL-TR-88-55)

Over the past 8 years, the Federal Aviation Administration (FAA) and the United States Air Force (USAF) have developed a number of user-friendly emissions and dispersion models for air quality assessment purposes. The major result of this effort is the Emissions and Dispersion Modeling System (EDMS) which was completed in 1985 and released to the general public. Since that time, major modifications have been made in the EDMS system to enhance its usability and incorporate an integral dispersion model into its code. As a result, the User's Guide is being reissued as—USER'S GUIDE- ISSUE 2—item (1) above.

The approach of this guide is to provide "hands-on" instructions on how to use the model. The mechanism for doing this is an example problem which is introduced early in this document. Four short sections precede the example problem instructions. The first shows how the EDMS evolved from the earlier FAA and USAF mainframe models. The next three sections describe the hardware and software required to run the system and describe how to add, delete, or change standard input data. Section 5 provides the "hands-on" instructions to produce:

(1) an emissions inventory of all sources at an airport/airbase; and
(2) an estimate of the concentrations produced by these sources at four airport locations. An inexperienced user should be able to process the example problem in less than 3 hours.

17. Key Words	18. Distribution Statement
POLLUTION, AIR POLLUTION, DISPERSION MODEL, EMISSIONS MODEL, DATA BASE, MICROCOMPUTER	THIS DOCUMENT IS AVAILABLE TO THE PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
UNCLASSIFIED	UNCLASSIFIED		

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

TABLE OF CONTENTS

1. INTRODUCTION 1

2. APPROACH 5

3. HARDWARE AND SOFTWARE REQUIREMENTS 6

   3.1 HARDWARE 6
   3.2 SOFTWARE 6

4. SYSTEM CHARACTERISTICS 7

   4.1 SYSTEM START-UP AND LOAD 7
   4.2 ENTERING AND PROCESSING LONG TERM METEOROLOGICAL DATA..... 7
   4.3 DATA FILES 8
   4.4 CHANGING OR ADDING MOTOR VEHICLE EMISSION INFORMATION..... 8
   4.5 DATA INPUT AND CHANGE..... 8

5. EXAMPLE PROBLEM 9

   5.1 INTRODUCTION 9
   5.2 GIVEN INFORMATION 9

      5.2.1 SOURCE INFORMATION..... 9
      5.2.2 RECEPTOR INFORMATION..... 12
      5.2.3 METEOROLOGICAL INFORMATION..... 12

   5.3 EXAMPLE PROBLEM INSTRUCTIONS 13

REFERENCES 27

APPENDIX A: PROCEDURES FOR CHANGING DATA FILES A-1
APPENDIX B: PRINTOUT OF EXAMPLE PROBLEM RESULTS B-1

1 - INTRODUCTION

Almost any expansion of operations or facilities at airports or airbases requires some type of an environmental assessment. In the area of air quality, this assessment usually involves the use of two models--one to prepare an inventory of emissions and the other to calculate the concentrations caused by these emissions as they disperse downwind.

Models to perform these tasks were developed in the early 1970's by both the United States Air Force (USAF) and the Federal Aviation Administration (FAA). The USAF developed the Air Quality Assessment Model (AQAM) (Rote, et al., 1975), and the FAA developed the Airport Vicinity Air Pollution model (AVAP) (Wang, et al., 1973). However, these models are becoming obsolete--they are expensive to operate, tedious to enter data into, and require a fully-qualified scientist or engineer to use.

The introduction of modern microcomputers into the workplace has made it possible to simplify the modeling task considerably. However, a prime question to be asked before developing a new model is whether to develop a separate modeling system for each agency, as was done with the earlier AVAP and AQAM systems, or whether to combine FAA and USAF requirements into a single system.

Consultations between the FAA and the USAF indicated that it would be both feasible and cost effective to develop a single modeling system that both agencies could use. The system that resulted from these consultations is called the Emissions and Dispersion Modeling System (EDMS). It overcomes the limitations of the earlier models by incorporating the new "Simplex A" (Segal, 1981) and the Graphical Input Microcomputer Model (GIMM) (Segal, 1983) technology. The EDMS also employs a modern commercial data base (Condor, 1983) to enter, store, and preprocess information. These features permit a lay person to perform a modeling task that had previously been reserved for a scientist or engineer.

EDMS is a dispersion model with an emissions front end. It can process line, point, and area sources at an airport or airbase and can operate in a refined or screening mode.

The emissions portion of EDMS receives emissions information entered through its Condor data base (Condor, 1983) and converts this information into emission rates from which an emissions inventory can be prepared. The dispersion portion of EDMS adds meteorological inputs to this emissions information and produces a report of concentrations at specified airport locations.

Figure 1 shows the elements of the emissions model, and Figure 2 shows the manner in which the emissions and dispersion models interface.

The original EDMS, which was released in December 1985, did not contain an integral dispersion model in its code. This capability is now incorporated into EDMS. In doing so, special table lookup and numerical integration techniques were added to the original GIMM to enable it to function as a refined model. These techniques, along with the new dispersion model code are described in (Segal and Hamilton, 1988).

Data Flow — Emissions Model

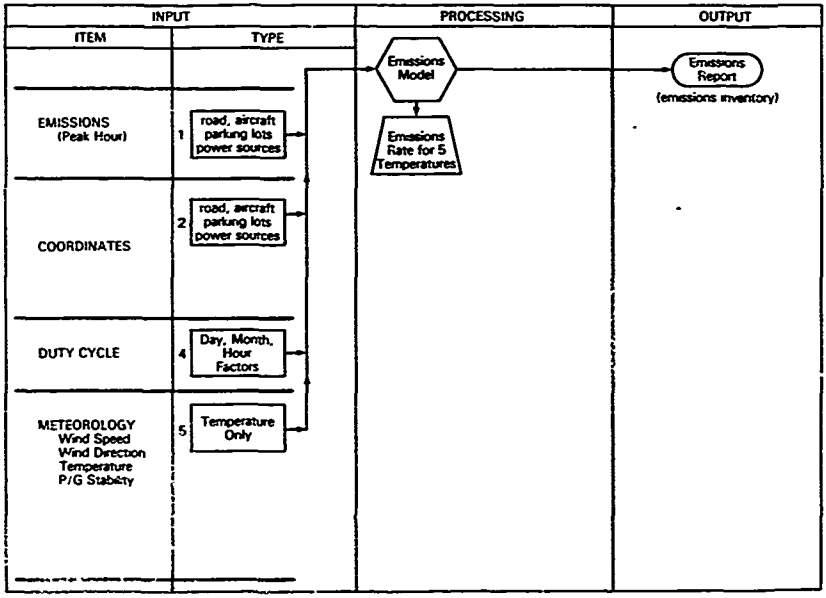
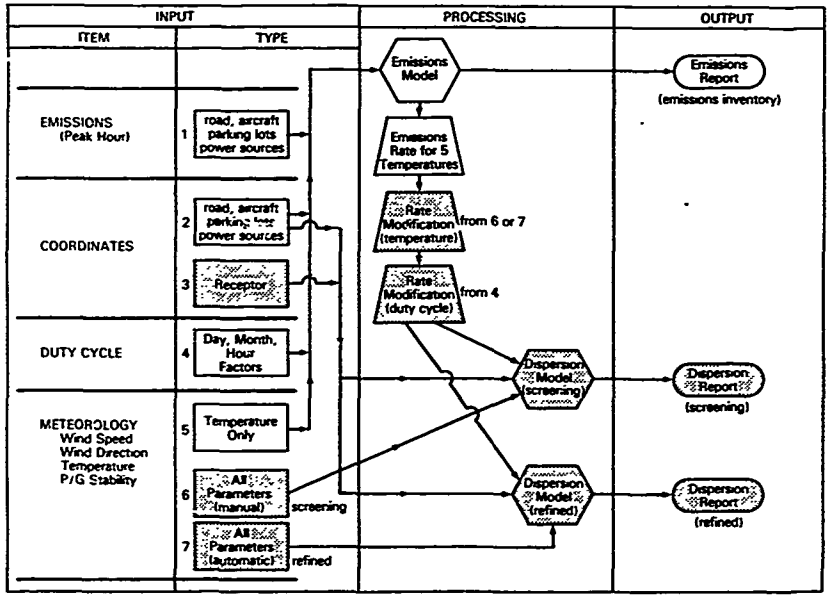


Figure 1

Data Flow — Emissions and Dispersion Model



NOTE: Shading represents dispersion model elements.

Figure 2

2 - APPROACH

This guide is intended to provide "hands-on" instructions on the use of the EDMS model. The mechanism for doing this is an example problem which is introduced early in this document. Only two sections precede the example problem instructions. The first acquaints the user with the hardware and software required to run the example problem. The second describes how to load the model diskettes into the computer and start it up. The example problem is then run by following a sequence of 111 steps. The user can check his results with those printed in Appendix B.

Yearly revisions to the User's Guide are planned. The user is therefore encouraged to communicate any corrections, additions, or simplifications to the system that he feels will enhance its effectiveness. Telephone contacts are Howard Segal, AEE-30, (202) 267-3494, for the FAA, and Captain Michael Moss, AFESC/RDVS, (904) 283-4234, for the USAF. Mailing addresses for both agencies are listed on the Technical Report Documentation Page (first page) of this report.

3 - HARDWARE AND SOFTWARE REQUIREMENTS

3.1 HARDWARE

The following is required:

1) One IBM-PC/XT or equivalent computer. One 5 1/4" floppy disk drive. One hard disk drive with 8 megabytes of unused space. At least 256 kilobytes of internal memory.

   While this model will also operate on a Zenith - 248 computer, its compatibility with other "AT" type computers has not been verified.

2) One printer compatible with the above.

The following are optional items:

1) At least 256 kilobytes of additional internal memory
2) A color graphics monitor
3) An Intel 8087 math coprocessor. This chip will significantly speed up system loading and data processing.
4) A graphics tablet digitizer (to facilitate coordinate entry)

3.2 SOFTWARE

The EDMS requires the following software:

1) MS-DOS version 2.0 or higher
2) 8 diskettes containing the EDMS code

To order diskettes, contact: Federal Aviation Administration
800 Independence Avenue, SW. (AEE-30)
Washington, D.C. 20591
Attn: Howard M. Segal
Telephone: (202) 267-3494

4 - SYSTEM CHARACTERISTICS

4.1 SYSTEM START-UP AND LOAD

The computer start-up procedure is described in steps 1 through 4 of the Example Problem Instruction section, Section 5.3. The EDMS is loaded into the computer as follows:

A. Insert EDMS disk #1 into the A: disk drive (there are 8 diskettes).

B. Type "A:" then (↵) which is the keyboard symbol for carriage return.

C. Type "INSTALL" then (↵) to start the load program.

D. The contents of disk #1 will be copied into the hard disk.

E. After disk #1 has been loaded, a prompt for disk #2 will appear on the screen. Remove disk #1 and insert disk #2 and press (↵).

F. Repeat step E until all 8 diskettes have been loaded. Time to load the diskettes is about one hour.

4.2 ENTERING AND PROCESSING LONG TERM METEOROLOGICAL DATA

One National Climatic Center (NCC) weather file, the one for observations made at Stapleton International Airport in 1982, has already been loaded into the EDMS model. A weather file for any other NCC station can be entered by typing the following commands after the user has obtained the appropriate data diskettes from the NCC:

```
> type "CD\EDMS1" ENTER

    Insert the first diskette

> type "COPY A:------*.DAT" ENTER
          where "------" is the NCC station number

    Insert the second diskette

> type "COPY A:------*.DAT" ENTER

> type "WEATHER" ENTER

> type "EDMS1" ENTER
```

4.3 DATA FILES

Data entered into the aircraft (AIR2), motor vehicle (MVEM) and other emission rate (standards) files have been entered for instructional purposes only. When performing an actual environmental assessment, it is the user's responsibility to ensure that these data are current and reflect the information desired. The user can check the data already loaded into the EDMS data files by accessing the appropriate source menu display and exercising the Standards option in that menu. The user can also check (or change) the loaded emission rate data by entering Condor directly. The procedure for doing this is described in Table A-1 of Appendix A.

4.4 CHANGING OR ADDING MOTOR VEHICLE EMISSION INFORMATION

Both high and low altitude emission rates for automobiles have been entered into the emission rate (standards) files for 1988, 1990, 1995, and 2000 fleet mixes in accordance with information listed in (EPA 1985). The motor vehicle data file (MVEM) default is for a 1988 motor vehicle fleet mix operating at a high altitude. If you wish to check the emission rate file presently coupled to the EDMS model or to process your scenario for other years (1990, 1995, or 2000) and/or other operational altitudes (high or low), refer to Appendix A for special instructions.

4.5 DATA INPUT AND CHANGE

The computer may take some time to respond to keyboard commands. The user should make sure that the red light near the disk drive is not lighted and that a screen is displayed before issuing the next keyboard command. The word ENTER in the text means that the carriage return key (↵) should be pressed. Text entries must be in upper case since the data base distinguishes between upper and lower case characters. Quotes around numbers, characters, or words are for identification only. They are not to be typed in.

A menu item can be entered quickly by typing the desired menu item as soon as it appears on the screen. The user does not have to wait for a complete menu display. A "C))" character on the screen means that the user has been ejected from the EDMS system--usually because of an input error. To reenter the system, type "HELP MAIN".

Data can be entered in two ways: through the "R" (revise) command displayed at the bottom of the data entry screens or by the "add new data" item displayed on the source, temporal, facility and receptor menus. The revision method is demonstrated only once--in steps 9 through 16. The "add new data" method is demonstrated many times--in the entry of all other data.

Data entry errors can be corrected on any screen with the "revise" command.

5 - EXAMPLE PROBLEM

5.1 INTRODUCTION

A simple source-receptor scenario has been prepared to lead the user through the steps for calculating an emissions inventory and for calculating pollutant concentrations at various airport locations. The problem is designed for an inexperienced layperson.

The source-receptor geometry for Washington National Airport is shown in Figure 3. There are 19 emission sources, six of which (letters B through G) were selected for the example problem.

5.2 GIVEN INFORMATION

Information to be entered into the example problem is listed below. Detailed instructions for entering these data are listed in Section 5.3.

5.2.1 Source Information

5.2.1.1 Hourly Changes in Source Activity

Power plants and other sources can have an hourly "duty cycle" varying from 100 percent-on to 100 percent-off. This duty cycle is established when the user enters factors of from "0" (100 percent-off) to "1" (100 percent-on) into the 43 fields of the temporal screen. These fields are broken down as follows: 24-hour fields--one for each hour of the day; 7-day fields--one for each day of the week; and 12-month fields--one for each month of the year. Through triple nesting these 43 entries permit the calculation of emission values for all 8760 hours of the year.

5.2.1.2 Source Scenario

The source-receptor geometry for Washington National Airport is shown in Figure 3. This geometry includes 19 sources, six of which are used in the Example Problem. These six sources consist of:

One power plant (source G)
One runway (source C)
One takeoff queue (source B)
Two roadways (sources D and E)
One parking lot (source F)

Source—Receptor Geometry at Wash. National Airport

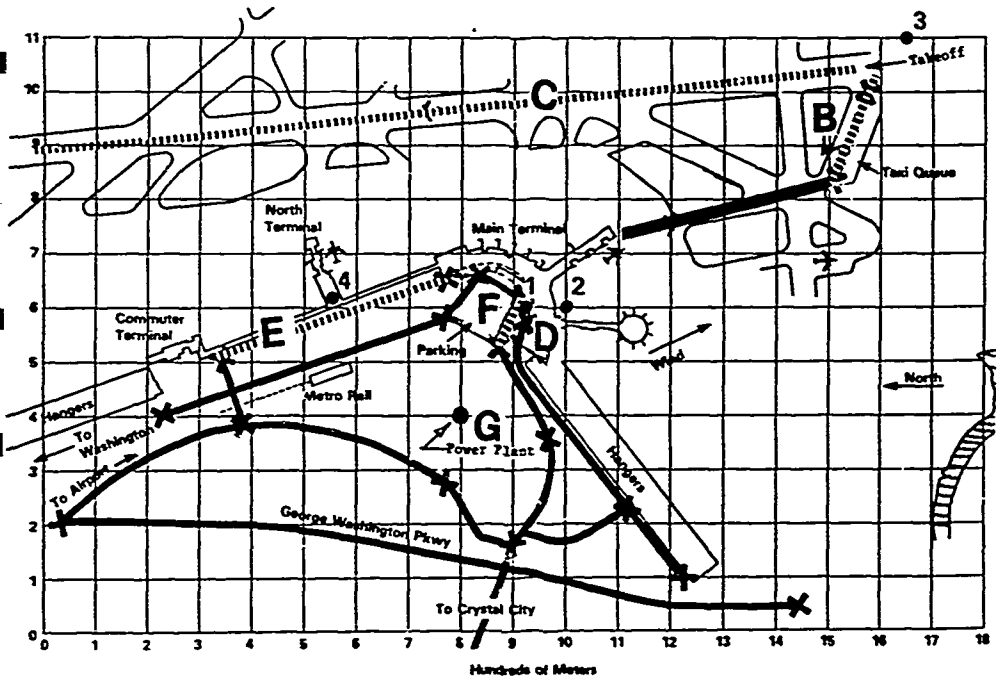


Figure 3

5.2.1.3 Source Related Inputs

Table 1 lists the source related inputs.

Table 1

SOURCE RELATED INPUTS

Source	Coordinates (M)				Emission Data	Duty Cycle	
	x1	y1	x2	y2		File Name	% Activity (Temporal Factor)
Power Plant	800	400			4 m tons/hr bitumenous coal	POWER	100% activity for all days, months & hours
Runway	1550	1050	0000	900	10 - 737's 12 - 727's	SCENARIO	0800 - 90% activity 0900 - 60% activity 2000 - 80% activity 2100 - 90% activity Aug - 60% activity Sept - 70% activity all other activity is 100%
Queue	1580	1000	1500	820	10 - 737's 12 - 727's	SCENARIO	same as "runway"
Roadway E	320	500	770	660	340 veh/hr 15 mi/hr 20% cold	SCENARIO	same as "runway"
Roadway D	880	530	910	610	1500 veh/hr 5 mi/hr 20% cold	SCENARIO	same as "runway"
Parking Lot	880 830	530 660	910 780	610 580	150 veh/hr 5 mi/hr 80% cold	SCENARIO	same as "runway"

5.2.2 Receptor Information

The following coordinates were used in this scenario:

Receptor Name	"X" Location (M)	"Y" Location (M)
#1 Main Terminal	920	600
#2 South of Main Terminal	1000	600
#3 Runway - North End	1650	1100
#4 North Terminal	550	610

5.2.3 Meteorological Information

The model can accept two types of meteorological data; one for the refined model calculations, and the other for the screening model calculations. Data for the refined calculations are seleced from hourly weather observational data files released by the National Climatic Center (NCC) in diskette form. To facilitate example problem processing, the NCC diskettes for one NCC weather station have already been entered into the model. The user has only to identify the range of hours he wishes to process in order to initiate the batched dispersion calculations. The times between 0800 and 0900 on August 11th (1982) were selected for input into the example problem.

To reduce the amount of time the user spends in running the screening model only one hour of meteorological data has been selected for user input. The values selected are listed below.

Parameter	Hourly averaged values
Wind speed (meters/second)	1
Wind direction (degrees)	235
Air temperature (degrees F.)	70
Pasquill/Gifford stability (2-5)	2

Note: Stability classes 2 - 5 correspond to Pasquill Gifford stability classes B - F.

5.3 EXAMPLE PROBLEM INSTRUCTIONS

Menu flow to each screen is shown in Figure 4. This flow chart should prove helpful if the user gets lost while exercising the example problem.

Provisions for graphics tablet use have not as yet been included in the revised computer code. Therefore, this User's Guide provides instruction for TABLET OFF operation only.

Start with instruction #1 to run the example problem.

PREPARE FOR DATA ENTRY:

	ACTION	PURPOSE
1	turn on computer, monitor and printer	activate system
2	press "ALT", "DEL", and "CTRL" keys simultaneously press "CAPS LOCK" key	boot system; preempt upper case case character entry
3	press ENTER a sufficient number of times to make the "C" or "A" character appear on the screen	make prompt character appear
4	type "C:" ENTER	make sure the system is in the "C" drive
5	type "CD EDMS1" ENTER	address the EDMS system
6	type "EDMSTOFF" ENTER	operate system without the graphics tablet

Menu Flow

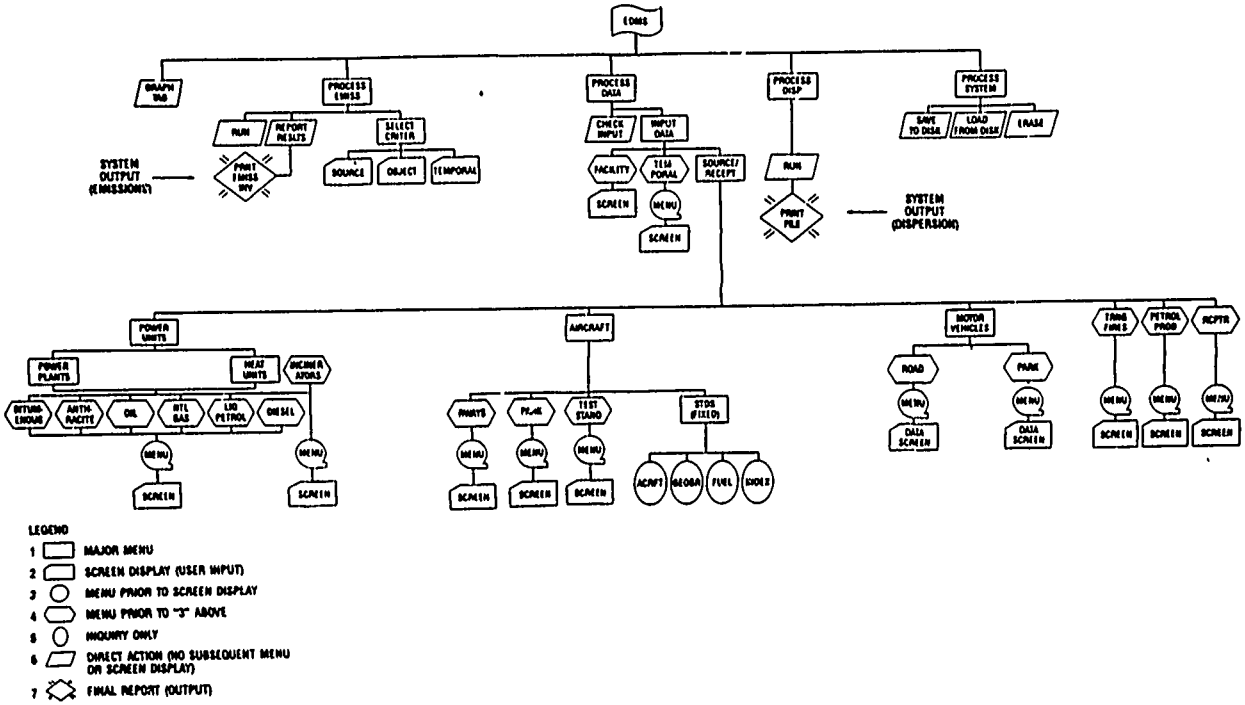


Figure 4

ENTER FACILITY DATA

7	type "2" ENTER	start to input data
8	type "1" ENTER	select main input menu
9	type "1" ENTER	display airport facility screen (item 1)
10	type "R" -- NOTE: the character "R" was selected from the option line at the bottom of the screen	activate revise mode prior to entering data
11	press ENTER six times	move cursor to latitude field
12	type "3851N" ENTER	enter latitude
13	type "7702W" ENTER	enter longitude
14	press ENTER thirteen times - NOTE: after passing through the last field (DEC 58) the select line at the bottom of the screen changes to the "OPTION" mode	move cursor through the remaining fields without changing any values
15	type "P" then E"	print and save data
16	press ENTER	return to main input menu

ENTER TEMPORAL DATA (MENU ITEM 2)

17	type "2" ENTER	select "TEMPORAL" item
18	type "1" ENTER	select "add new data" option
19	type "POWER" ENTER	enter file name
20	type ENTER 43 times	enter default of "1.0" into all fields to show 100% activity at all times
21	type "P" then "E"	print and save temporal file "POWER"
22	type "1" ENTER	display blank screen for second file
23	type "SCENARIO" ENTER	enter file name (SCENARIO)
24	press ENTER 28 times	enter defaults values (100%)
25	type .9 ENTER; type .8 ENTER type .6 ENTER; type .6 ENTER type .9 ENTER; type .7 ENTER	enter appropriate temporal factors from Table 2 into the next six fields

TABLE 2

TEMPORAL ACTIVITY

Object Number 1 1 SRC.CD 0 TEMPORAL SCENARIO

Hour	Factor	Hour	Factor	Day	Factor	Month	Factor
0100	H1 1	1300	H13 1	M	D1 1	JAN	M1 1
0200	H2 1	1400	H14 1	T	D2 1	FEB	M2 1
0300	H3 1	1500	H15 1	W	D3 1	MAR	M3 1
0400	H4 1	1600	H16 1	Th	D4 1	APR	M4 1
0500	H5 1	1700	H17 1	F	D5 1	MAY	M5 1
0600	H6 1	1800	H18 1	Sa	D6 1	JUN	M6 1
0700	H7 1	1900	H19 1	Su	D7 1	JUL	M7 1
0800	H8 .9	2000	H20 .8			AUG	M8 .6
0900	H9 .6	2100	H21 .9			SEP	M9 .7
1000	H10 1	2200	H22 1			OCT	M10 1
1100	H11 1	2300	H23 1			NOV	M11 1
1200	H12 1	2400	H24 1			DEC	M12 1

26	press ENTER successively to exit	exit screen
27	type "P" then "E"	print then save
28	type "10" ENTER	return to previous menu

ENTER SOURCE DATA - POWER PLANTS

29	type "3" ENTER	select "source input"
30	type "2" ENTER	select "power input"
31	type "1" ENTER	select "power plant"
32	type "1" ENTER	select "bituminous"
33	type "1" ENTER	display blank screen
34	type "POWER" ENTER	enter the relational name of the temporal file (POWER)
35	type "PUGET POWER #1" ENTER	enter the name of the power plant
36	type "800" ENTER type "400" ENTER	enter plant coordinates (meters from origin)
37	press ENTER seven times	enter defaults
38	type "4" ENTER	enter amount of fuel burned
39	press ENTER a sufficient number of times to pass through all fields	enter remaining defaults
40	type "P"then "E"	print and save data
41	type "10" ENTER type "10" ENTER type "10" ENTER	return to source menu

ENTER SOURCE DATA - AIRCRAFT OPERATIONS

42 type "4" ENTER — select new source (aircraft)

43 type "1" ENTER — prepare to input aircraft type and runway information

44 type "1" ENTER — display input screen

45 enter appropriate runway, runway queueing, and aircraft operations data from Table 3 by moving cursor through the fields (enter name or value then move cursor to next field by pressing the ENTER key).

TABLE 3

RUNWAYS AND RUNWAY QUEUEING AREAS

```
                          Object number I      3 SRC.CD 61 TEMPORAL SCENARIO
Runway number R                 1
  Name      DATA32              MAIN

  Location of runway:     Point 1  X1  1550.      Y1  1050.
                          Point 2  X2     0.      Y2   900.

Aircraft  AIRCFT          737-17
  Hourly takeoffs  LTO      10.
  Ground support % GSEACT   100.

Runway queueing areas:
  Location of queue # 1:  Point 1  Q1X1  1580.    Q1Y1  1000.
                          Point 2  Q1X2  1500.    Q1Y2   820.
  Location of queue # 2:  Point 1  Q2X1     0.    Q2Y1     0.
                          Point 2  Q2X2     0.    Q2Y2     0.

  Which queue is being used?  1 or 2   QUENUM  1

Hourly touch and go:        HTGO  0.
```

46 type "P" then "E" — print and save data

ENTER SOURCE DATA - AIRCRAFT OPERATIONS

47 type "1" ENTER display input screen

48 input data from Table 4

TABLE 4

RUNWAYS AND RUNWAY QUEUEING AREAS

```
                          Object number 1      4 SRC.CD 61 TEMPORAL SCENARIO
Runway number R               1
  Name      DATA32            MAIN

  Location of runway:     Point 1  X1  1550.      Y1  1050.
                          Point 2  X2     0.      Y2   900.

Aircraft  AIRCFT          727-17
  Hourly takeoffs   LTO     12.
  Ground support %  GSEACT  100.

Runway queueing areas:
  Location of queue # 1:  Point 1  Q1X1  1580.    Q1Y1  1000.
                          Point 2  Q1X2  1500.    Q1Y2   800.
  Location of queue # 2:  Point 1  Q2X1     0.    Q2Y1     0.
                          Point 2  Q2X2     0.    Q2Y2     0.

  Which queue is being used?  1 or 2   QUENUM  1

Hourly touch and go:        HTGO  0.
```

49 type "P" then "E" print and save data

50 type "10" ENTER return to source menu
type "10" ENTER

ENTER SOURCE DATA - AUTO ROADWAYS

51 type "5" ENTER — select motor vehicle source

52 type "1" ENTER — select roadway mode

53 type "1" ENTER — display data screen for roadway #1

54 input data from Table 5

TABLE 5

R O A D W A Y S

Object number 1 5 SRC.CD 71

Temporal name TEMPORAL SCENARIO

Roadway name DATA32 NORTH TERMINAL

Vehicles/hour CAUT 340.

Speed (mph) CVAS 15.

Cold starts (%) CCLD 20.

End points of road:

Point 1 X1 320. Y1 500.

Point 2 X2 220. Y2 660.

55 type "P" then "E" — print and save data

ENTER SOURCE DATA - AUTO ROADWAYS

56	type "1" ENTER	display data screen for roadway
57	input data from Table 6	input data for roadway #2

TABLE 6

ROADWAYS

Object number 1 6 SRC.CD 71

Temporal name TEMPORAL SCENARIO

Roadway name DATA32 MAIN_TERMINAL

Vehicles/hour	CAUT	1500.			
Speed	CVAS	5.			
Cold starts (%)	CCLD	20.			
End points of road:	Point 1	X1	880.	Y1	530.
	Point 2	X2	910.	Y2	610.

58	type "P" then "E"	print and save data
59	type "10" ENTER	return to motor vehicle screen

ENTER SOURCE DATA - AUTO PARKING

60 type "3" ENTER — select parking lot option

61 type "1" ENTER — display parking lot screen

62 input data from Table 7

TABLE 7

VEHICLE PARKING FACILITIES

Object number I 7 SRC.CD 75

Temporal name TEMPORAL SCENARIO

Roadway name DATA32 MAIN TERMINAL LOT

Average distance from gate to parking space AVED 300 (feet)

Vehicles entering/hour VINP 150.

Vehicles existing/hour VOUT 150.

Speed (mph) CVAS 5.

Cold starts on exit (%) CCLD 80.

Coordinates of corners:

X1	870.	Y1	530.
X2	919.	Y2	620.
X3	828.	Y3	660.
X4	780.	Y4	580.

63 type "P" then "E" — print and save data

64 type "10" ENTER — return to motor vehicle

65 type "10" ENTER — return to source-receptor menu

ENTER RECEPTORS

66 type "6" ENTER — prepare to enter receptor coordinates

67 type "1" ENTER — display receptor screen

68 move cursor through fields to enter relevant data from Table 8 — enter name and coordinates of first receptor

TABLE 8

RECEPTOR NO. 1

R E C E P T O R S

Object number I 8 SRC.CD 0 TEMPORAL SCENARIO

Receptor number	J				1
Name	DATA32 MAIN TERMINAL				
Location	X	920	Y		600

69 type "P" then "E" — print and save coordinates of 1st receptor

70 repeat steps 67 thru 69 three more times using the data listed below in order to enter coordinates of receptors 2, 3, and 4,

Receptor number	Receptor name	X	Y
2	SOUTH OF MAIN TERMINAL	1000	600
3	RUNWAY - NORTH END	1650	1100
4	NORTH TERMINAL	550	610

71 type "11" ENTER — return to main menu

All emissions and receptor data are now entered. The remaining tasks are to:

1. select the sources to run in the emissions model;
2. check to ensure that all data has been entered correctly;
3. run emissions model and print results;
4. run dispersion model in the screening mode -- print results;
5. run dispersion model in the refined mode -- print results
6. save all example problem data on a separate diskette
7. erase all data from hard disk to prepare system to accept new scenario

SELECT EMISSIONS MODEL RUN CRITERION

72	type "3" ENTER	initiate emissions model run
73	type "1" ENTER	select source criterion
74	type "1" ENTER	select source category criterion
75	type "R"	set data entry at "REVISE"
76	enter number 1 into the first field and press ENTER to pass the remaining fields	select "process all sources"
77	type "P" then "E" then ENTER	print and save selection screen
78	type "11" ENTER	return to main menu

CHECK DATA ENTERED INTO SCREENS

79	type "2" ENTER	initiate emission data check
80	type "2" ENTER - this task will take about 15 minutes	select emissions check option

NOTE: If you have made no errors in entering data, the main menu will be displayed and the printer will not print out any errors. When this happens, proceed to step 81 (run emissions model). If errors have been printed out they must be corrected. First identify the flow path to the screen requiring correction. Refer to Fig. 4. Then using the knowledge you have already gained, select the menu screen just prior to the screen you wish to change. Type "2" ENTER and make the appropriate changes. Reenter the step sequence at step 79.

RUN EMISSIONS MODEL AND PRINT RESULTS

81	type "4" ENTER type "3" ENTER type "2" ENTER	run emissions model
82	type "3" ENTER	print out results of emission model run (check results with those in Appendix B)
83	type "4" ENTER	return to main menu

RUN DISPERSION MODEL IN SCREENING MODE -- PRINT RESULTS

84	type "4" ENTER	select process dispersion menu
85	type "1" ENTER	run GIMM (wait while files are processed, when prompted proceed with next step)
86	type "S" ENTER	select screening mode
87	type "1988" ENTER	enter year
88	type "AUG" ENTER	enter month
89	type "1" ENTER	enter day of month
90	type "16" ENTER	enter hour of day
91	type "70" ENTER	enter temperature in deg F
92	type "1" ENTER	enter wind speed
93	type "225" ENTER	enter wind direction
94	type "2" ENTER	enter P/G class
95	type "Y" ENTER	initiates dispersion calculation and report printout for 1 of 4 sources (check results with those in Appendix B)

Note: After printout has stopped and the interactive display "PROCESS ANOTHER HOUR ?" appears, proceed with step 96

96	type "N" ENTER	proceed to next source - "parking lots"
97	repeat steps 96 through 96 three more times to run all sources	
98	type "10" ENTER type " 6" ENTER	return to main menu return to DOS

RUN DISPERSION MODEL IN REFINED MODE -- PRINT RESULTS

99	type "REFINED" ENTER	access the weather file
100	type "8, 11, 08"	code for Aug, 11 - 0800 hours
101	type "8, 11, 09"	code for Aug, 11 - 0900 hours
102	type "R" ENTER	start refined run for 1st source
103	after printing stops- type "R" ENTER -- repeat 3x	complete processing of all 4 sources (check results with those in Appendix B)
104	type "EDMS"	return to main system

SAVE AND ERASE DATA

105	type "5" ENTER	select save menu option
106	insert formatted diskette into the "A" drive	prepare to save data on diskette
107	type "1" ENTER type "Y" ENTER	initiate save data option
108	type "2" ENTER type "Y" ENTER	erase saved scenario from hard disk This action clears the hard disk to accept new data.
110	type "4" ENTER	return to main menu
111	type "6" ENTER	leave the EDMS program and return to DOS

REFERENCES

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APPENDIX A

PROCEDURES FOR CHANGING DATA FILES

1. SYSTEM CONSIDERATIONS

The "C)" prompt implies that the user is in the Disk Operating System (DOS) and the "C))" implies that the user is in the Condor data base. When screens or menus appear you are in the Condor application program, EDMS. From DOS you can enter the EDMS model itself or else enter the Condor data base independent of the EDMS model. All commands should be entered in upper case. The commands for moving between DOS, Condor, and the EDMS program are shown in Table A-1.

Table A-1

COMMANDS FOR MOVING BETWEEN DOS, CONDOR, AND EDMS

FROM → / TO ↓	DOS C)	CONDOR C))	EDMS PROGRAM "No Prompt"
DOS C)	****	C)) C)) "SYSTEM"	1. enter any menu and select #11 (return to main menu) 2. from main menu, select return to DOS option
CONDOR C))	C) C) "CD\EDMS1" C) "DBMS"	****	no menu option is avalable to return the user to Condor other than going through DOS
EDMS PROGRAM "No Prompt"	C) C) "CD\EDMS1" C) "EDMS"	C)) C)) "HELP MAIN"	****

2. NAMES OF STANDARDS FILES

AIRZ - Aircraft
MVEM - Motor Vehicles
INEF - Incinerators
PPEF - Heating/power plants
TFEM - Training Fires
TNEF - Petroleum products (tank farms)
FUEL - Fuel Standards

3. SPECIAL NOTATIONS

Aircraft data files list eight Geomodes, each of which has a different TIME IN MODE (TIM). (A Geomode is an aircraft mode of operation such as taxi, takeoff etc.) The relationship of EDMS Geomodes to analogous EPA TIMES IN MODE are listed in Table A-2.

Table A-2

EDMS MODES ASSIGNED TO CIVIL AIRCRAFT

EDMS MODES	EPA MODES	EPA TIMES IN MODE (MIN)		
		TURBO FAN* TURBO JET	TURBO* PROP	PISTON**
1 - RUNWAY ACTIVITY	TAKEOFF	0.7	0.5	0.3
2 - RUNWAY QUEUE	***RUNWAY QUEUE	12.0	12.0	4.0
3 - TOUCH AND GO				
4 - TAXIWAY CYCLE	***TAXI OUT	7.0	7.0	8.0
	***TAXI IN	7.0	7.0	4.0
5 - AIRCRAFT PARKING				
6 - ENGINE TESTING				
7 - CLIMB	CLIMB	2.2	2.5	6.0
8 APPROACH	APPROACH	4.0	4.5	6.0

* Page 58473, Federal Register, December 30, 1982 (Final Engine Emission Standards

** Page 19101, Federal Register, July 17, 1973 (Initial Engine Emission Standards)

***26 minute EPA taxi-idle time in mode breakdown (estimated)

4. EXAMPLE CALCULATIONS TO UPDATE STANDARDS FILES

4.1 Example Problem - Aircraft

A number of example problems have been constructed to trace the steps for adding or updating emission rate data or changing times in mode (TIM) for aircraft.

4.1.1 Entering New Data

Problem: To enter emission rates for a 707-3D aircraft during takeoff

a. Given Information:

		Emission Rates (gm/sec):	
Source Code (SRC.CD):	66	CO:	4.06
Aircraft type:	707-3D	HC:	2.26
Geomode:	1	NO_x:	57.34
Fuel:	13	SO_x:	4.52
Number of Engines:	4	Part:	3.70
Time in Mode:	0.7 min		
Takeoff Speed:	42 m/s		

To prepare for data entry, enter Condor as per Table 1, and type:

C>> "ENTER AIR2"

A blank screen will appear on the monitor. This screen, along with the data values you are to enter, is reproduced below.

```
                    A I R C R A F T   E M I S S I O N S   F A C T O R S

                                                                    SRC.CD 66
                                                      Geomode 1 - Takeoff
Aircraft                  AIRCFT  707-3D              Geomode 2 - Runway Queue
Geographic mode           GEOMODE      1              Geomode 3 - Touch & Go
                                                      Geomode 4 - Taxi in/out
Fuel                      FUEL.CD     13              Geomode 5 - Aircraft Parking
Number of engines         ENG.NUM      4              Geomode 6 - Engine Testing
                                                      Geomode 7 - Aircraft Climb
Time in mode              TIMEMOD   0.7  minutes       Geomode 8 - Aircraft Approach

Takeoff speed             TOSPEED    42  meters/sec
Emission rates in kg/hr

 CO      4.06
 HC      2.26
 NOx    57.34
 SOx     4.52
 Part    3.70
```

Enter the values underlined above into the blank screen appearing on the monitor. Type "E", a carriage return and "RUN STANDARDS" when finished. If you wish to add data for additional Geomodes, type "C" (for Continue).

4.1.2 Updating Existing Data

Problem: To update HC emission rates for a DC-9-50 aircraft in Geomode 1. Change field value from 0.227 kg/hr (already entered) to 0.22699 kg/hr.

To prepare for updating, type:

C>> "UPDATE AIRZ"

After the search condition prompt appears, type: "ALL"

After typing "ALL" a screen will appear with field values entered for a 737 aircraft in Geomode 1. Press the "N" character 8 times to scroll through the data base and reach the DC-9-50 aircraft in Geomode 1.

The screen you are to update will appear on the monitor, as shown below.

AIRCRAFT EMISSIONS FACTORS

SRC.CD 66

			Geomode 1 - Takeoff
Aircraft	AIRCFT	DC-9-50	Geomode 2 - Runway Queue
Geographic mode	GEOMODE	1	Geomode 3 - Touch & Go
			Geomode 4 - Taxi in/out
Fuel	FUEL.CD	13	Geomode 5 - Aircraft Parking
Number of engines	ENG.NUM	2	Geomode 6 - Engine Testing
			Geomode 7 - Aircraft Climb
Time in mode	TIMEMOD	.70 minutes	Geomode 8 - Aircraft Approach
Takeoff speed	TOSPEED	42.00 meters/sec (it has meaning only for geomode #1, it is ignored otherwise)	

Emission rates in kg/hr

CO	3.170000
HC	.277000
NOx	91.900000
SOx	4.530000
Part	1.700000

To prepare for data revision, type "R"

Move the cursor to the underlined "HC" field on the lower left hand portion of the displayed screen and change the .227 value listed to .22699. After moving the cursor through the remaining fields, type "E" followed by a carriage return and "RUN STANDARD". This command is necessary to update the emission rate (standard) file to reflect the change made on the screen.

Note: If you wish to change data for the next geomode, inject a "C" command prior to the "E" command, type "R" and iterate the above procedure until you have reached the last geomode you wish to change. At this point select the "E" option followed by a carriage return to stop updating.

4.1.3 Changing Times In Mode

Problem: Change the runway queue time in mode (TIM) from 12 minutes to 5 minutes for all aircraft.

You must first save the 12 minute TIM data for possible future use. The DOS command to do this is:

C) "COPY AIRZ.DAT AIRZ12.DAT"

You can then proceed to revise the 12-minute TIM screen, which has been saved, to reflect 5-minute TIM values. To do this reenter Condor (see Table 1) and issue the command:

C)) "UPDATE AIRZ"

When the search condition appears type: "WHERE GEOMODE IS 2"

After the first AIRZ screen appears, move to the "TIMEMOD" field and change the value from 12 to 5 minutes. Move the cursor through the last field of this screen, exercise the "C" for continue option and change all aircraft TIM's from 12 to 5 minutes. After the last aircraft screen has been modified return to Condor and type:

C)) "RUN STANDARDS"

Note: At some future date, if you wish to reuse the 12-minute TIM data it can be restored to the EDMS model by typing the following DOS command:

C) "COPY AIRZ12.DAT AIRZ.DAT"

And from Condor type:

C)) "RUN STANDARDS"

Note - Emission rates for the following aircraft have been loaded into the the AIRZ standards file:

Aircraft	Engine	Names Recognized by EDMS
B737-200	JT8D-17	737-17
DC-9-50	JT8D-17	DC-9-50
B727-200	JT8D-17	727-17
B747-200B	JT9D-70	747-70
B747-200B	RB211-524	747-524
L1011-200	RB211-524	L1011
DC-10-30	CF6-50C	DC-10-30
DH6	PT6A-27	DH6-27
B99	PT6A-27	B99-27
C-150	O-200	C-150
SKYMASTER	TSIO-360C	SKYMASTER
NAVAJO	TIO-540	NAVAJO
CV580	501D22A	CV580
GENERIC SINGLE	O-200	GEN-SING
GENERIC TWIN	TSIO-360C	GEN-TWIN

4.2 Example Problem - Motor Vehicles

4.2.1 General

Motor vehicle emissions data are stored in eight Mobile 3 data files, any one of which can be copied into the MVEM file. These eight files were extracted from the table lookup listing of (EPA, 1985) and were for the years 1988, 1990, 1995, and 2000 for either high (HI) or low (LO) altitude operation.

The format for these specially designated Mobile 3 files is "MVEMxxnn" where "xx" designates "HI" or "LO" altitude and "nn" designates the last two digits of the fleet mix year (88, 90, 95, 00). The designations of the 8 MVEM files are as follows:

MVEMHI88.DAT
MVEMHI90.DAT
MVEMHI95.DAT
MVEMHI00.DAT

MVEMLO88.DAT
MVEMLO90.DAT
MVEMLO95.DAT
MVEMLO00.DAT

Any one of the eight Mobile 3 data files in the EDMS directory can be copied into the EDMS program by executing the following DOS command:

C) "COPY MVEMxxnn.DAT MVEM.DAT"

Then enter Condor and type:

C)) "RUN STANDARDS"

3.2.2 File Change Example

Problem: Enter Mobile 3 data into the MVEM file for a low altitude fleet mix for the year 1995. To accomplish this task, enter DOS and type:

C) "COPY MVEMLO95.DAT MVEM.DAT" --- Now access Condor and type:

C)) "RUN STANDARDS"

To ensure that the 1995 data have been loaded into the model, return to Condor and type "UPDATE MVEM" followed by "ALL". Check to make sure that the emission rates listed on the screen correspond with those from (EPA 1985) which you have just entered. Note that the emission units on the screen should be grams/mile not grams/second.

To facilitate the running of the example problem, one of the eight files listed above has already been loaded into the EDMD. This file contains data for a 1988 fleet mix -- high altitude operation. In doing an actual air quality assessment you will probably want to consider other fleet mix years and other altitudes of operation. When exercising the file change procedure noted above the new file overwrites the existing file.

APPENDIX B

PRINTOUT OF EXAMPLE PROBLEM RESULTS

a

OVERVIEW

A note in the example problem states the the results from the emission and dispersion model calculations can be be checked against a master by refering to Appendix B.

In this appendix, the first page of the emissions inventory report and all pages of the screening and refined reports are printed out to permit this checkout of results.

Detailed emission report.

EDMS EMISSIONS REPORT

DATE: 01/01/80

SITE: WASHINGTON NATIONAL AIRPORT

STATE: DC

Note:- All values are in grams.

Detailed emission report:
SITE: WASHINGTON NATIONAL AIRPORT
Note:- All values are in grams.

SOURCE TYPE: BITUMINOUS COAL POWER PLANT
SITE NAME: PUGET POWER #1
ID NUMBER: 2
TEMPORAL: POWER

	CARBON MONOXIDE	HYDROCARBONS	NITROGEN OXIDES	SULPHUR OXIDES	PARTICULATES
JANUARY	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
FEBRUARY	8.136E+05	1.492E+05	2.034E+07	1.058E+08	2.115E+08
MARCH	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
APRIL	8.640E+05	1.584E+05	2.160E+07	1.123E+08	2.246E+08
MAY	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
JUNE	8.640E+05	1.584E+05	2.160E+07	1.123E+08	2.246E+08
JULY	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
AUGUST	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
SEPTEMBER	8.640E+05	1.584E+05	2.160E+07	1.123E+08	2.246E+08
OCTOBER	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
NOVEMBER	8.640E+05	1.584E+05	2.160E+07	1.123E+08	2.246E+08
DECEMBER	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
TOTAL	1.052E+07	1.928E+06	2.630E+08	1.367E+09	2.735E+09

Total of all power/heating plants and incinerators.

	CARBON MONOXIDE	HYDROCARBONS	NITROGEN OXIDES	SULPHUR OXIDES	PARTICULATES
JANUARY	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
FEBRUARY	8.136E+05	1.492E+05	2.034E+07	1.058E+08	2.115E+08
MARCH	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
APRIL	8.640E+05	1.584E+05	2.160E+07	1.123E+08	2.246E+08
MAY	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
JUNE	8.640E+05	1.584E+05	2.160E+07	1.123E+08	2.246E+08
JULY	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
AUGUST	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
SEPTEMBER	8.640E+05	1.584E+05	2.160E+07	1.123E+08	2.246E+08
OCTOBER	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
NOVEMBER	8.640E+05	1.584E+05	2.160E+07	1.123E+08	2.246E+08
DECEMBER	8.928E+05	1.637E+05	2.232E+07	1.161E+08	2.321E+08
TOTAL	1.052E+07	1.928E+06	2.630E+08	1.367E+09	2.735E+09

EMISSION REPORT (POINT)
AUG-11-82 (800 HR.)

INPUTS									OUTPUTS				
COORDINATES OF POINT SOURCE'S ORIGIN (0,0)(M)			INITIAL PARAMETERS(M)					(AP-42)	EMISSION RATES GM/SEC				
REC #	X1	Y1	SIG Z	SIG Y	PLUME HT.	TONS/HR	TEMP (F)		CO	HC	NOX	SOX	PART
1	800,	400				0	56	PUGET POWER 01	3.33E-01	6.17E-02	8.33E+00	4.33E+01	8.67E+01
								TOTAL	3.33E-01	6.17E-02	8.33E+00	4.33E+01	8.67E+01

DISPERSION REPORT

INPUTS								OUTPUT					
DATE	HR	W/S (M/S)	WD (DEG)	P/G (A=1)	RECEPTOR NO.	X	Y	CONCENTRATION GM/M^3 CO	HC	NOX	SOX	PART	
AUG-11-82	8	0	346	4	1	920	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	power plant
AUG-11-82	8	0	346	4	2	1000	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	3	1650	1100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	1	920	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	incinerator
AUG-11-82	8	0	346	4	2	1000	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	3	1650	1100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	1	920	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	fuel tank
AUG-11-82	8	0	346	4	2	1000	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	3	1650	1100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	1	920	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	training fire
AUG-11-82	8	0	346	4	2	1000	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	3	1650	1100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	1	920	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	2	1000	600	1.45E-07	2.68E-08	3.62E-06	1.88E-05	3.77E-05	
AUG-11-82	9	2.0	236	3	3	1650	1100	3.87E-06	5.67E-07	7.47E-05	3.99E-04	7.98E-04	
AUG-11-82	9	2.0	236	3	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	1	920	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	2	1000	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	3	1650	1100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	1	920	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	2	1000	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	3	1650	1100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	1	920	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	2	1000	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	3	1650	1100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.0	236	3	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

EMISSION REPORT (PARKING LOTS)
AUG-11-82 (800 HR.)

INPUTS														OUTPUTS				
COORDINATES OF SOURCES (M) ORIGIN AT (0 , 0)								(MOBILE 3)					EMISSION RATES					
LOT								SIG	PLUME	CARS/	MIN/	TEMP	YEAR	GM/SEC				
#	X1	Y1	X2	Y2	X3	Y3	X4	Y4	Z	HT.	HR	CAR	(F)		CO	HC	NOX	SOX	PART
1	870,	530	919,	620	928,	660	780,	580	1.5		150	0	56	0	7.16E-01	5.82E-02	7.42E-03	6.83E-05	6.83E-05
														TOTAL	7.16E-01	5.82E-02	7.42E-03	6.83E-05	6.83E-05

DISPERSION REPORT

INPUTS								OUTPUT					
DATE	HR	W/S M/S	WD DEG	P/G A=1	RECEPTOR			CONCENTRATION GM/M^3					
					NO.	X	Y	CO	HC	NOX	SOX	PART	
AUG-11-82	8	0	346	4	1	920	600	6.42E-04	5.22E-05	6.66E-06	6.13E-08	6.13E-08	
AUG-11-82	8	0	346	4	2	1000	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	3	1650	1100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	8	0	346	4	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
AUG-11-82	9	2.01	236	3	1	920	600	9.48E-04	7.71E-05	1.04E-05	9.61E-08	9.61E-08	
AUG-11-82	9	2.01	236	3	2	1000	600	1.49E-05	1.21E-06	1.63E-07	1.51E-09	1.51E-09	
AUG-11-82	9	2.01	236	3	3	1650	1100	1.75E-05	1.42E-06	1.91E-07	1.77E-09	1.77E-09	
AUG-11-82	9	2.01	236	3	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

EMISSION REPORT (AIRCRAFT)
AUG-11-82 (000 HR.)

INPUTS									OUTPUTS				
COORDINATES OF SOURCES (M) ORIGIN AT (0 , 0)				INITIAL PARAMETERS(M)			(AP-42)		EMISSION RATES				
REC #	X1	Y1	X2	Y2	SIG Y	PLUME HT.	SIG Z	ACFT/HR	AIRCRAFT TYPE *	GM/SEC CO	HC	NOX	SOX	PART
1	1550,	1050	0,	900	8	5	6	10	takeoff 737-17	2.80E-01	1.47E-02	6.00E+00	3.00E-01	1.10E-01
1	1580,	1000	1550,	1050	8	5	6	10	queue 737-17	2.80E+01	5.17E+00	2.00E+00	5.83E-01	1.83E-01
2	1550,	1050	0,	900	8	5	6	12	takeoff 727-17	3.67E-01	2.67E-02	1.07E+01	5.33E-01	2.00E-01
2	1580,	1000	1550,	1050	8	5	6	12	queue 727-17	3.50E+01	9.17E+00	3.50E+00	1.03E+00	3.17E-01
									TOTAL	5.54E+01	1.44E+01	2.22E+01	2.45E+00	9.10E-01

DISPERSION REPORT

INPUTS								OUTPUT				
DATE	HR	M/S	WD DEG	P/G A=1	RECEPTOR NO.	X	Y	CONCENTRATION GM/M^3 CO	HC	NOX	SOX	PART
AUG-11-82	8	10	346	4	1	920	600	1.46E-05	1.07E-06	4.30E-04	2.15E-05	7.99E-06
AUG-11-82	8	10	346	4	2	1000	600	1.53E-05	1.12E-06	4.50E-04	2.25E-05	8.37E-06
AUG-11-82	8	10	346	4	3	1650	1100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AUG-11-82	8	10	346	4	4	550	610	1.26E-05	9.34E-07	3.77E-04	1.88E-05	7.01E-06
AUG-11-82	9	12.0	236	3	1	920	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AUG-11-82	9	12.0	236	3	2	1090	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AUG-11-82	9	12.0	236	3	3	1650	1100	1.87E-02	4.87E-03	3.16E-03	6.10E-04	1.94E-04
AUG-11-82	9	12.0	236	3	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

EMISSION REPORT (ROADWAYS)
AUG-11-82(808 HR.)

INPUTS														OUTPUTS				
COORDINATES OF SOURCES (M) ORIGIN AT (0 , 0)					INITIAL PARAMETERS(M)			(MOBILE 3)						EMISSION RATES				
ROAD #	X1	Y1	X2	Y2	SIG Z	SIG Y	PLUME HT.	CARS/HR	MPH	%COLD START	TEMP (F)	YEAR		GM/SEC CO	HC	NOX	SOX	PART
1	320,	500	770,	660	3.04	6.08		340	15	20	56	1982		1.85E+00	1.74E-01	7.51E-02	5.17E-05	3.33E-04
2	880,	530	910,	610	3.19	6.38		1500	5	20	56	1982		3.55E+00	2.97E-01	6.55E-02	4.80E-05	2.67E-04
													TOTAL	5.41E+00	4.71E-01	1.41E-01	9.17E-05	6.00E-04

DISPERSION REPORT

INPUTS						OUTPUT					
DATE	HR	W/S M/S	WD DEG	P/G A=1	RECEPTOR NO.	X	Y	CONCENTRATION GM/M^3 CO	HC	NOX	SOX	PART
AUG-11-82	8	0	346	4	1	920	600	1.65E-03	1.38E-04	3.85E-05	1.84E-08	1.24E-07
AUG-11-82	8	0	346	4	2	1000	600	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AUG-11-82	8	0	346	4	3	1650	1100	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AUG-11-82	8	0	346	4	4	550	610	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
AUG-11-82	9	2.0	236	3	1	920	600	6.34E-03	5.33E-04	1.21E-04	7.43E-08	4.95E-07
AUG-11-82	9	2.0	236	3	2	1000	600	5.13E-04	4.31E-05	9.75E-06	6.01E-09	4.01E-08
AUG-11-82	9	2.0	236	3	3	1650	1100	4.35E-05	3.74E-06	9.09E-07	6.33E-10	4.18E-09
AUG-11-82	9	2.0	236	3	4	550	610	3.36E-04	3.20E-05	1.40E-05	9.76E-09	6.30E-08